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Memorial Issue

The CORNELL ENGINEER

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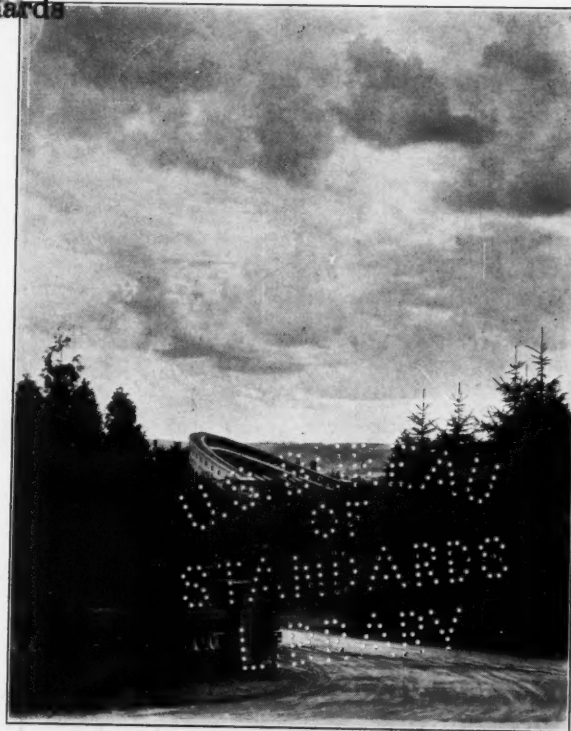


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In This Issue:

DEAN HERMAN DIEDERICH, 1874-1937

By Dean-Emeritus Dexter S. Kimball

Volume 3

OCTOBER, 1937

Number 1

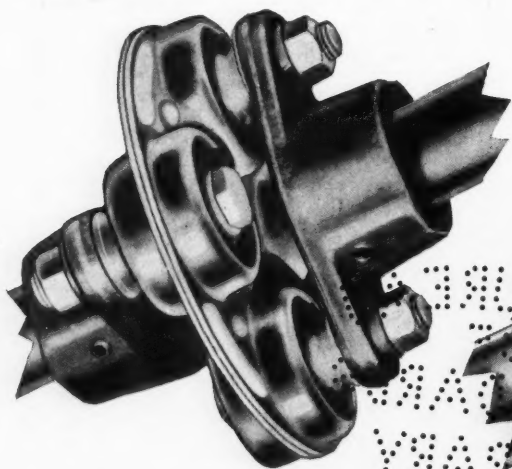
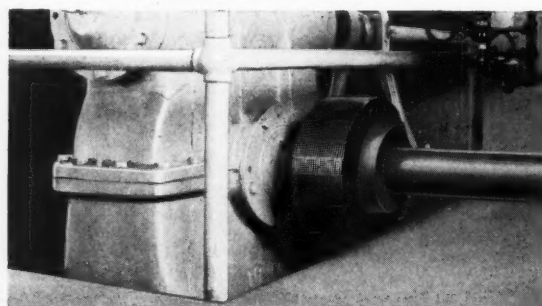
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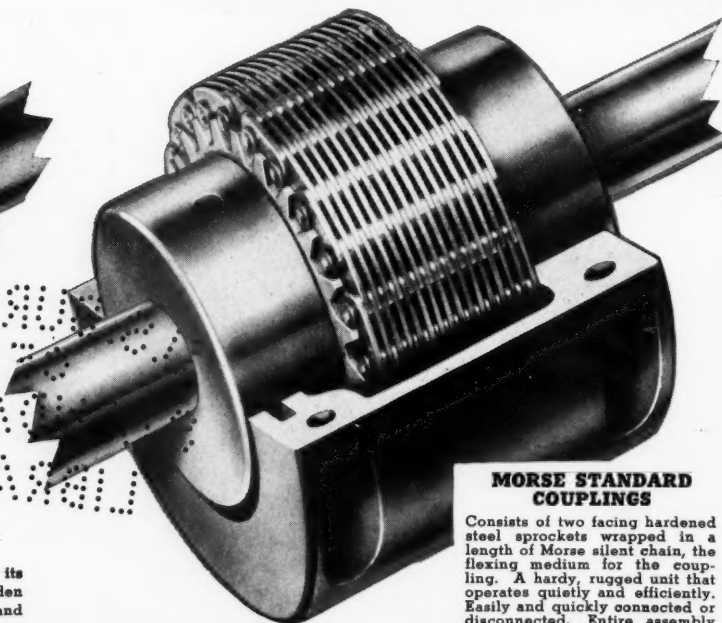
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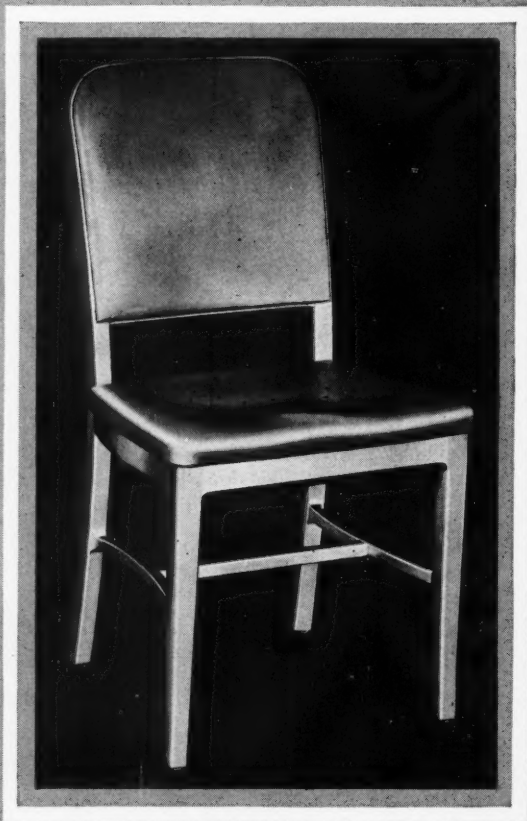
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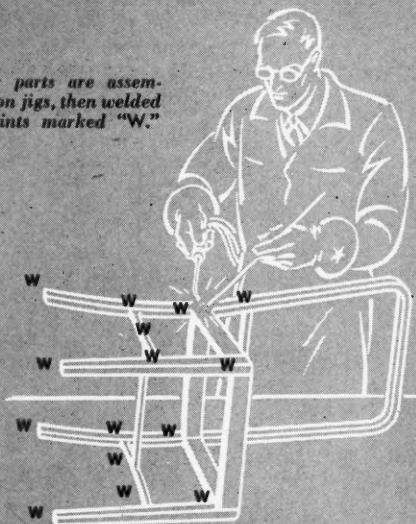
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THE CORNELL ENGINEER

PUBLISHED MONTHLY DURING THE COLLEGE YEAR

Volume 3

OCTOBER, 1937

Number 1

COMMENTS

In this issue, dedicated to the memory of the late and beloved Dean of the Engineering School, Dean-Emeritus Dexter S. Kimball offers a fitting tribute to Dean Herman Diederichs which lays bare the many secrets of the man's greatness. Those who knew him will well appreciate Dean Kimball's characterizations. Those to whom the name is new will be introduced to one of Cornell's truly great.

* * *

In the first of a series of two articles, Mr. T. R. Cuykendall explains the workings of an ingenious apparatus developed in his laboratory for the measurement of very short time intervals. The second article will explain the results obtained in tests now being made investigating the nature of elastic waves created by impact.

* * *

Professor S. C. Hollister is sage and inspirational as he greets the incoming class and welcomes them into the fold of the College of Engineering in "Greetings, Class of 1941."

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Published monthly during the college year, October to May. Subscription prices for Alumni through the Cornell Society of Engineers—\$2.00, by Post Office Money Order, Check, etc., to the Cornell Society of Engineers, 245 Madison Avenue, New York, N. Y. This subscription includes membership in the Cornell Society of Engineers. Subscriptions not including membership in the Cornell Society of Engineers \$1.50. Price of this issue \$.15. Entered as second class matter at the Post Office at Ithaca, N. Y. Acceptance for mailing at special rate postage provided for in Section 1103, Act of October 3, 1917, authorized August 1, 1918.



DEAN HERMAN DIEDERICHS
1874-1937

The CORNELL ENGINEER

Volume III

October, 1937

No. 1

Dean Herman Diederichs, 1874 - 1937

By Dexter S. Kimball

Dean-Emeritus of College of Engineering, Cornell University

Dean Herman Diederichs passed away on August 31 at Clifton Springs Sanitarium of an obscure anemic disease and after several months of illness. His death removes another of the outstanding figures that have not only made the College of Engineering famous, but who, by reason of their personal characteristics, gave luster to the entire institution.

Dean Diederichs was born in Muenchen-Gladbach, Germany, August 12, 1874, and received his elementary education there. He was the oldest of a family of seven, all of the remainder of whom survive him. These are Mrs. Katherine Shafer, of Brooklyn, N. Y.; Mrs. Louise Weber, of Waterbury, Conn.; P. Paul, of Dolgeville, N. Y.; Hugo N., of Owens, W. Va.; and William J., of Upper Darby, Pa.

In 1888 his parents migrated to this country and settled in Dolgeville, N. Y. The family was one of modest circumstances, yet means were found to send him and others of the family to high school at Dolgeville, where he won a state scholarship. He walked to Herkimer, more than twenty miles distant, to take the competitive examinations. With this and a promise of financial assistance from friends (which did not materialize), he entered Cornell University in 1893. Here, largely through his own exertions, he not only completed his course in engineering in the prescribed four years, with such a good record as to be elected to the honorary society of Sigma Xi, but he also found time to engage in student activities and was prominent as a shot-putter. He graduated with the degree of ME in 1897, which, for a person who had to learn English at fourteen years of age, must be considered as an accomplishment.

The following year he was appointed an Instructor in Experimental Engineering under the late Professor Rolla Carpenter. In 1902 he was promoted to an Assistant Professorship, to a Professorship in 1907, and succeeded Professor Carpenter as Head of the Department of Experimental Engineering in 1920. In 1928 he was appointed the first incumbent of the John

Edson Sweet Professorship, founded in honor of the distinguished engineer who at one time was a professor at Cornell. In 1921 he became Director of the Sibley School of Mechanical Engineering and in 1936 he was appointed to the Deanship of the College of Engineering—a well-deserved honor, which he was fated to enjoy for a little over one year.

His entire manhood was, therefore, devoted to the service of his Alma Mater, not only in his chosen field, but in many of the broader aspects of university life. No man of the faculty was called upon more frequently to serve on important committees, and the confidence of his colleagues in his sound judgment and honesty is attested by his election by the University Faculty in 1929 to serve as one of the Faculty Representatives on the Board of Trustees, which office he filled for three years. Space does not permit even an enumeration of the many services of this sort that he rendered to the university community. His service to the College of Engineering was even greater. For many years no important question whether of academic or administrative character has been decided without seeking his advice and judgment. The curriculum of mechanical engineering, in particular, has been shaped under his guiding hand. He was indeed a wise adviser.

And he was no less active and interested in the problem of student life. Interested naturally in athletics, he was for many years a member of the Athletic Council and for some years served as President of that body. Here, again, his sterling character impressed itself upon the difficult problems of athletics, and that this was amply appreciated by the student body is shown by the following dedication of *The Cornellian* of 1935:

"To Herman Diederichs, who for forty-two years has served his Alma Mater as student, teacher and administrator, and, who, through his intense interest and untiring efforts, has succeeded in inaugurating a new era in Cornell Athletics. For his active participa-

tion in Campus affairs, he will long be remembered, and as a stern teacher and a sympathetic, honest friend, the Class of 1935 will revere him—Cornell's Man of the Year." Surely student praise can attain no higher level of appreciation.

Dean Diederichs was essentially a man of scholarly mind and his outlook on life was naturally colored by this fine quality. He was an authority in the field of experimental engineering. In 1905 he and Professor R. C. Carpenter collaborated in writing a treatise entitled, *Internal Combustion Engines* and in 1910 they produced *Experimental Engineering*, which is a standard work in that field. In 1931 he and Professor W. C. Andrea collaborated in a monumental treatise entitled, *Experimental Engineering* (Volume I, *Engineering Instruments*) and Volume II is in preparation. He also translated Guldner's *Internal Combustion Engines* from the German. He was the author of a long list of publications in the technical press, beginning as early as 1900. "Analysis of Coals," "Comparative Tests of Plain and Para-Pneumatic Pulleys" and "Investigation of the Effects of Cold Rolling on the Physical Properties of Cold Rolled Steel" are but a few of his scholarly productions. He was the co-author of three bulletins of the Engineering Experiment Station at Cornell, dealing with "The Purification of Salt Made from Central New York Brines", "The Heat Transfer from Steam to Heavy Fuel Oils", and "Flame Propagation in Closed Cylinders". In 1930 the Melville Medal was awarded jointly by the American Society of Mechanical Engineers to Dean Diederichs and Mr. William P. Pomeroy "in recognition of a thesis of exceptional merit" on certain problems involved in pumping liquids through pipes. He also made many tests and investigations as a consultant, among which may be mentioned a power test on the steamer "Morro Castle", of the Ward Line, a report on a plant for the production of oxygen, for the American Oxygen Company and, particularly, a voluminous report on the power plant of the Hall of Records in New York City. This test consumed a year and the report constitutes a book of 673 pages.

Dean Diederichs was a member of the following honorary and scientific societies: Quill and Dagger, Senior Honorary Society; Phi Sigma Kappa fraternity; Sigma Xi; Tau Beta Pi; Phi Kappa Phi; American Society of Mechanical Engineers; Society of Automotive Engineers; American Society of Metals; Verein Deutscher Ingenieur and Society for the Promotion of Engineering Education. Last year he was chairman of the Board of Honors and Awards of the A.S.M.E. and also of the Nominating Committee for 1936. He was vice-president of the second district of the National Collegiate Athletic Association and Chairman

of the Board of Athletic Policy of Cornell University.

His teaching naturally reflected his scholarly habits and Germanic thoroughness. He had little sympathy with lazy or indifferent students, but he would go to any length to make a point clear and no student went to him for help and came away empty handed. Perhaps his best teaching work was his lectures on Materials of Engineering given to many generations of electrical and mechanical engineers and which, in the opinion of the writer, were classics. He was an excellent lecturer and could interest the student in this highly technical subject. Of lasting value also is his work in helping to develop the present course in experimental engineering than which there is none better, if as good, in this country. It should be remembered that the engineering experimental laboratory was conceived by the late Dr. Robert H. Thurston at Stevens Institute and brought by him to Cornell in 1885. The background of the present course was developed under his guidance by the late Professor Rolla C. Carpenter and has been widely copied elsewhere. Professor Diederichs, therefore, drank from the original source and carried with him to his death the inspiration of these two great pioneers. It has been his labor to modify and adapt the course to an ever changing industrial world and this he has done in a masterly manner, keeping the course in advance of the times, though almost always handicapped for lack of money and equipment. And it was this same inspiration that enabled him to keep the spirit of research alive in mechanical engineering, for, in spite of many handicaps, too many to enumerate, the long list of scientific publications issued under his guidance has continued to grow. His influence and knowledge in this important side of the work of the college will be one of its heaviest losses, and one that will be impossible to compensate for. Men of his thorough scholarly and scientific background and long experience in experimental work are rare indeed, and difficult to replace. One of the reasons for his wide and deep knowledge lay in his omnivorous reading, not only of scientific and engineering literature, but also of a broad general character. And this wide reading habit embraced German literature as well as American and English. He was a very well-informed man.

I have always held him in high regard as an administrator. He was my close friend for nearly forty years, and my most valued adviser during his deanship. Not that we have always agreed on all matters, but because of his openmindedness it was always possible to come to a conclusion that seemed best and which was mutually satisfactory. He never allowed his personal feelings or opinions to affect in any way the welfare of any member of the faculty, and his interest in the life of the college was deep and

fair-minded. He had certain definite policies for the future of the College, which I had hoped he would have an opportunity to develop, but fate ordained otherwise. That these good qualities were fully appreciated by his colleagues, was attested by the almost unanimous vote by which his nomination as Dean was approved.

His relations to his students were quite unique. Despite the fact that he was a bachelor, he had a real fondness for young people and sympathy with their problems. He was far from being a demonstrative person, and his rather severe countenance and somewhat brusque manner were often forbidding to the new student. It usually took some experience with him to discover that this rough exterior hid a warm and understanding heart. Dr. C. F. Hirshfeld, in an appraisal of him on the occasion of his appointment to the Deanship, has very aptly expressed this quality thus—"In some respects the poorer scholars and breakers of rules and regulations among the older classes were more fortunate than those who travelled the straight and narrow path of scholarship and good conduct. Many of the weak, the lame, and mischievous who appeared before Professor Diederichs and his associates, by special though not sought after invitation, discovered that back of the severe manner of the strict disciplinarian there dwelt a kindly, understanding, and human living soul." He had a fine sense of humor through which he could always view student manners, and he was fond of relating humorous situations that arose in his contacts with underclassmen. Only a short time ago he related to me with

glee, two absolutely new and equally spurious reasons advanced by freshmen, why it was imperative for them to get away several days before the beginning of the spring recess. He said that because the reasons were at least new and ingenious, though of doubtful validity, he granted the requests and laughed heartily.

No student ever went to him for advice or help on any matter without receiving assistance, and as freshmen grew into seniors, they acquired respect, admiration, and often real affection for this rugged and unique personality. To hundreds of returning alumni, the campus will not be quite the same, because "Died" will not be there.

One of Dean Diederichs' most outstanding virtues was his essential honesty, not only in matters pertaining to his professional work and his teaching, but in all his personal contacts with people. I have never known a man on whose word I could more thoroughly rely, or one of greater integrity, in all the many transactions that transpired between us. And he was modest to an extreme degree, which accounted, no doubt, for some of his apparent great reserve. He was a sociable man, fond of company, and a first class companion. His wide range of reading enabled him to converse intelligently on almost any topic. Frailties he no doubt had, as have all of us, but they were overshadowed by his rugged, upstanding personality, and by the many helpful services he rendered to all around him. Like Joseph of Arimathea, "he was a good man and just," and Cornell University and this entire community are the better because he lived and worked among us.

DEXTER S. KIMBALL

A Method for the Determination of Very Short Time Intervals

By TREVOR R. CUYKENDALL

Research Associate in Civil Engineering

In the progress of an investigation of the Mechanics of Impact, sponsored by the School of Civil Engineering, it was found necessary to measure a time interval between two events which was of the order of 0.0005 to 0.00005 seconds. An important requirement was that the first event occur independently of the operation of any part of the timing device. The interval timer developed to satisfy the above requirements is capable of application to short time measurements in many other types of work, and hence

its description here may be of interest.

The essential parts of this timer, consisting of a commercial cathode-ray tube and a circuit for switching its beam on and off the fluorescent screen, are shown in Figure 1. The elements C, G₁, G₂, A form the "electron gun" which projects between the plates P a stream of electrons and focusses it on the screen at the right. The intensity of this beam, and hence of the spot on the screen, is controlled by the potential of G₁ with respect to the cathode much in the

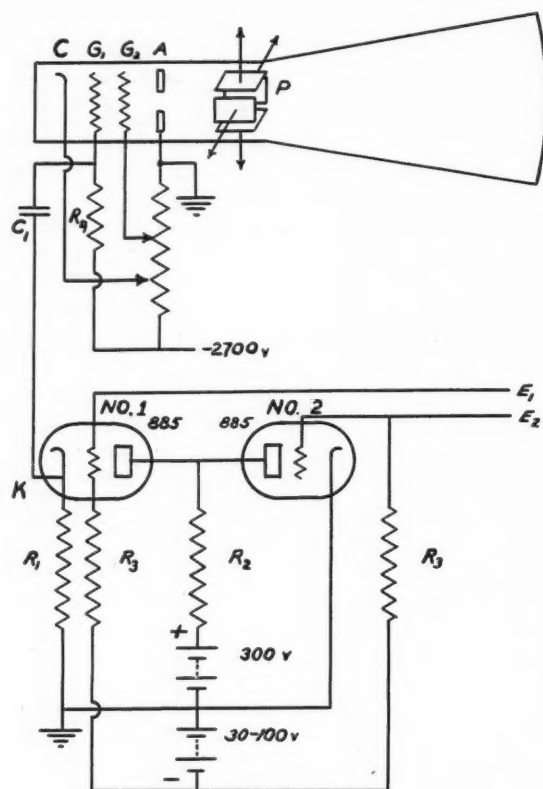


Figure One

Schematic diagram of timing circuit and cathode-ray tube.

- $C_1 = 0.01$ mfd.
- $R_1 = 10,000$ ohms
- $R_2 = 5,000$ ohms
- $R_3 = 50,000$ ohms
- $R_4 = 75,000$ ohms

same manner as the plate current in an ordinary radio tube is controlled by the potentials of its grids. The deflecting plates P may be connected to some source of fluctuating e. m. f. producing a deflection of the cathode ray stream and consequently a motion of the spot so as to "sweep out" a curve characteristic of the potentials applied at P. To illustrate simply the basic operation of a cathode-ray tube, let us suppose that one pair of plates, e.g., the two plates shown as horizontal in Fig. 1, are grounded and an alternating voltage is applied to the other pair of plates. It may be seen that this arrangement will deflect the beam so as to trace a horizontal straight line on the screen. The voltages applied to the plates P are known as the "sweep" voltages.

In the operation of the timer under discussion, the two pairs of plates of the cathode-ray tube are connected to two sinusoidal alternating voltages of equal amplitudes but 90° out of phase. The spot on the screen traces a circle at a rate and of a diameter determined by the frequency and magnitude, respectively, of the sweep voltage. When the sweep voltage

is maintained on the deflecting plates and the grid G_1 is of such potential as to permit a cathode-ray beam to fall on the fluorescent screen, the spot sweeps successively over the same path producing a steady bright circle. But in the application which forms the subject of this article, the Grid G_1 is maintained, except for the short interval of time we wish to measure, at a negative potential such that no beam is projected to the screen and no circle seen. If a potential pulse is applied to the grid G_1 so that it turns on the cathode-ray beam for a very short interval, the spot will trace only a portion, an arc, of the circle described above. From the angle subtended by the arc and the frequency of the sweep voltage, one can quickly determine the duration of the electrical pulse. If the arc is made greater than one complete circle, by an adjustment of the sweep frequency, a spiral may be used in lieu of the circle with a consequent gain in accuracy of the time interval measurement. This spiral may be produced by decreasing the magnitude of the sweep voltage during the critical time in a manner to be discussed presently.

The measurement of the time interval between two isolated events requires a scheme for varying the potential of G_1 so as to turn on the beam at the instant the first event occurs and to cut off the beam when the second event occurs. This is performed by a circuit, shown schematically in the lower part of Fig. 1, which employs two gas filled tubes known as Thyratrons. Each tube is initially non-conducting so that there is no current in R_1 and R_2 , and the cathode K is at ground potential. When the first event occurs, it produces at E_1 a positive pulse which establishes the arc discharge in tube No. 1. The resultant current in R_1 makes K positive with respect to ground and sends a positive pulse thru C_1 to G_1 , turning on the cathode-ray beam. The second event "fires" tube No. 2, resulting in an additional current in R_2 , which decreases the potential of K, and hence sends a negative pulse to G_1 , turning off the beam. As discussed previously, the time interval is determined from the angle swept out by the beam.

A detailed circuit of the timer and sweep voltage amplifiers is shown in Fig. 2. The potentiometer P and voltmeter V facilitate adjustment of the grid bias of the Thyratrons. The relay S extinguishes the arcs in the tubes by opening the plate circuit. Additional contacts on the relay make possible the simultaneous operation of external circuits. The two-phase sweep voltage is obtained from the amplifiers shown on the left of the cathode-ray tube. From the frequency divider circuit, driven by a quartz crystal oscillator similar to that used in radio broadcast transmitters, a number of discrete frequencies between 5,000 and 200,000 cycles may be chosen. This volt-

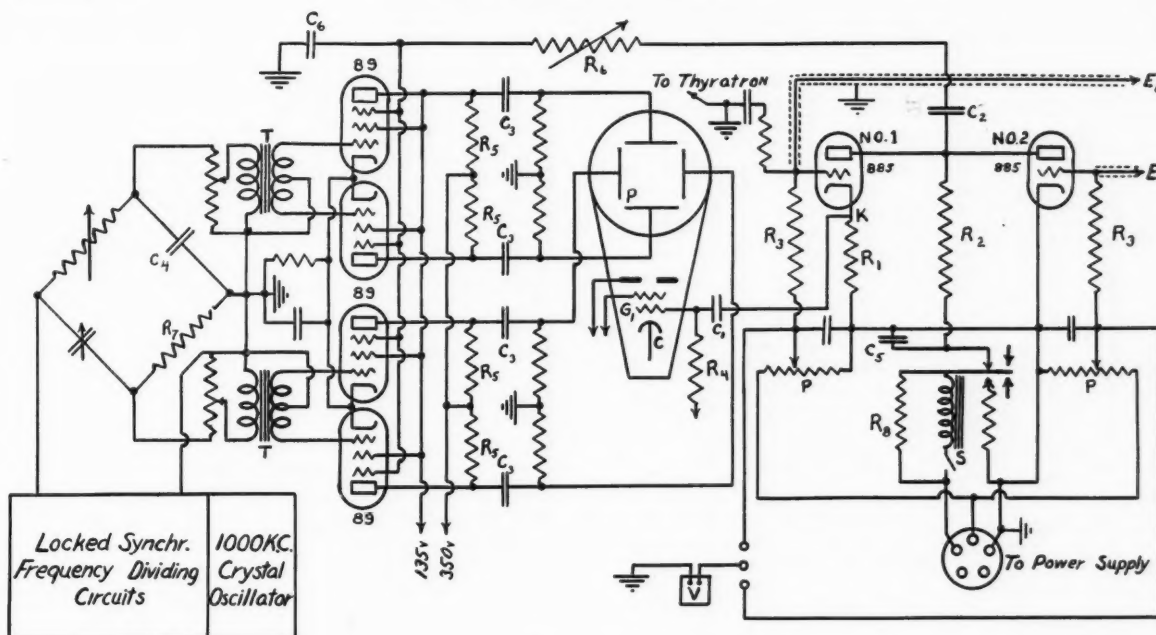


Figure Two

Wiring diagram of the complete timing apparatus. The two-phase sweep voltage, obtained from the bridge C_4R_7 is amplified by type 89 tubes in push-pull.

$R_5 = 15,000$ ohms
 $R_6 = 50,000$ ohms
 $R_7 = 10,000$ ohms
 $R_8 = 250,000$ ohms

$C_2 = 0.03$ mfd.
 $C_3 = 0.002$ mfd.
 $C_4 = 0.003$ mfd.
 $C_5 = 4.0$ mfd.
 $C_6 = 0.01$ mfd.

age is connected to the phase splitting bridge C_4R_7 in which the voltage across C_4 is made 90° out of phase with that across R_7 by suitable adjustment of the circuit constants. Each voltage is amplified by type 89 tubes in push-pull and applied to the deflecting plates of the oscilloscope.

It is to be noted that in addition to more conventional methods, the degree of amplification, and hence the diameter of the circle, may be varied by adjusting the potential of the suppressor grids of the 89 tubes. This control allows one to obtain the spiral pattern instead of the circle by causing a decrease in the magnitude of the sweep voltage at a rate determined by the values of C_2 , C_6 and R_6 . As may be seen from the circuit in Fig. 2, this sweep voltage decrease is initiated by the firing of Thyatron No. 1.

Fig. 3 is an unretouched print of a record made by holding a piece of Defender H.G.S. film against a standard-screen Du Mont 54-8-H cathode-ray tube operated at 2,700 volts anode voltage and 5,000 cycle sweep. Ample exposure has been obtained with similar photographs when a 10,000 cycle sweep was employed. For a quick and rough measurement, the trace may be observed visually rather than photographically since the persistence of the fluorescent screen is sufficient to allow one to trace with a china marking

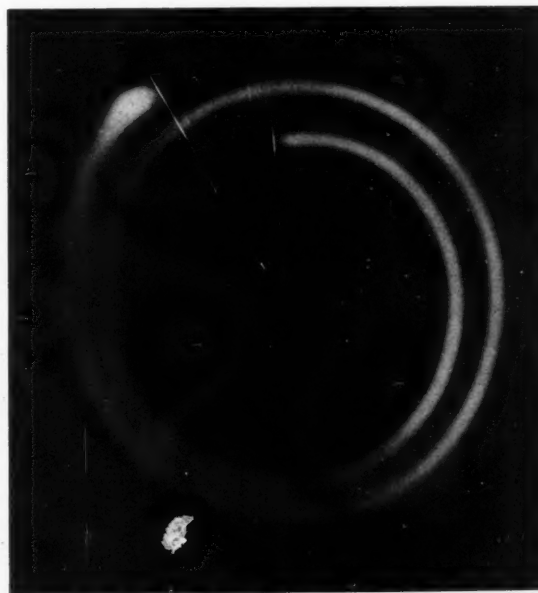


Figure Three

Reproduction of a record made on Defender H.G.S. film. The cathode-ray tube was operated at 5,000 cycle sweep and 2,700 volts anode potential. One revolution of the beam is equal to 200 microseconds. The record shown indicates a time interval of 385 microseconds.

pencil the outline of the spiral. It is probable that the use of the long decay type of screen would make visual observation at higher sweep frequencies entirely satisfactory.

It is to be expected that the time constants of certain circuits must be examined in relation to the magnitude of the interval to be measured. For example, the time constant of C_1R_4 must be such that the grid G_1 will not become sufficiently negative to cut off the cathode-ray beam *before* Thyatron No. 2 is fired. If non-inductive resistors are used and consideration is given to capacity relationships in the placing of the wiring on the chassis, the uncertainty in the arcing of the type 885 tubes will be the greatest error in the measurement of very short intervals. Tests indicate a random fluctuation of 1 or 2 microseconds in the operation of these tubes.

This interval timer has proven very satisfactory for the measurement of intervals from 50 to 600 millionths of a second. Although intervals greater than 2,000 microseconds are easily determined, other existing methods for the measurement of such large intervals may be more adaptable to the particular problem involved. The timer is most valuable in the region of 50 to 1,000 microseconds.

The timing of snapshots of elastic waves in doubly refracting (photoelastic) material has been an interesting application of this timer. The impact of a mass striking an end of a prismatic bar produces an elastic wave which travels with the velocity of sound (about 50,000 inches per second for the material employed). This bar is placed in the field of a photoelastic polarizer in which the light source is an electric spark discharge. Due to the high velocity of the elastic waves an extremely brief flash of light and accurate timing between the impact and the flash are essential. In the operation of the system the impact initiates both the timer (event E_1) and thru a delay circuit the spark discharge; the latter is so coupled to the timer as to initiate the firing of Thyatron No. 2 (event E_2). Fig. 4 shows two pictures so obtained. A small cylinder, seen in Fig. 4, was placed between the end of the specimen and a rigid (as compared to the specimen) body. The impact occurred at the opposite end of the specimen and is not shown in the figure. The pressure between the specimen and the cylinder, produced by the elastic wave undergoing reflection at the end of the bar, causes the typical circular patterns seen in the figure. The interval between impact and light flash was 0.00008 seconds greater for the picture on the left than for the one

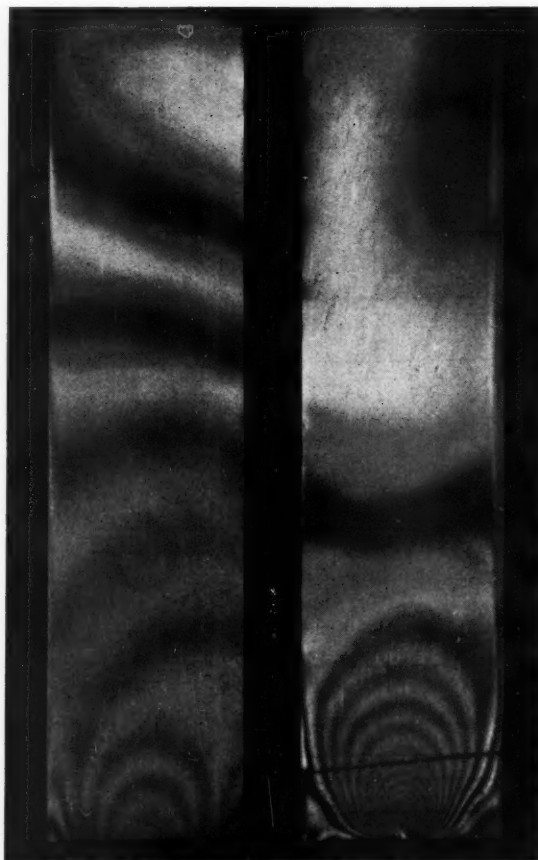


Figure Four

Typical photoelastic pictures of an elastic wave obtained during preliminary studies. The point of impact of each bar was at its upper end and is not shown. The timer is essential in the determination of the time interval between the impact and the flash of light which exposes the photographic film. This interval was 0.00051 seconds for the picture on the left and 0.00043 seconds for the one on the right.

on the right. These illustrations were obtained during preliminary studies; much remains to be done. It is hoped that a more complete discussion of the impact phenomena will be given soon in this publication.

The author wishes to acknowledge grants from the John McMullen Fund and the Westinghouse Research Fund of Cornell University for the support of a project of which the development of this timer has been a part. The author also acknowledges the assistance of Mr. A. H. Taylor in the development of this timer.

GREETINGS!

CLASS OF 1941

To all of you who are entering Cornell's College of Engineering for the first time I extend a hearty welcome, a welcome in which the staff and the students gladly join.

You have chosen to enter a profession which has through past generations built up an honorable reputation for service to mankind. As you advance in your profession you will be privileged to assume the fruits of this reputation built up for you by the services of others. This great privilege must not be treated lightly. It cannot pass on to future generations except by your own acts of honest and conscientious service.

You have chosen to come to Cornell to receive your engineering training. The enviable reputation of Cornell in engineering has been built by others in advance of your coming. You have every right to be justly proud of her reputation as a part of Cornell's body of engineers. Whether you will prove worthy to share honestly in the advantages this may give you will depend upon you. The reputation of Cornell in the future is in your hands. You are not privileged to act wholly as free agents because whatever you do in your profession will reflect in some measure upon others of Cornell. Guard her reputation jealously by giving your best to your profession.

We wish you every success in your new venture both for yourself and for Cornell. It is the earnest desire of the staff to further you in your professional career. If you remember that success over the four years is in the final analysis made up of success from day to day, and if you attack and master your professional work accordingly, you will achieve that success which is so important to yourself. In so doing also you will continue to carry on Cornell's tradition to those to follow you.

S. C. HOLLISTER,
Acting Dean

In Memoriam

"The death of Dean Diederichs has brought sorrow to thousands of Cornellians and to none more deeply than to his colleagues on the campus who have worked closely with him these many years. There are others more fitted than I to speak of his personality but it was my privilege to know him well in his official capacity as Professor, Director and Dean and I welcome the opportunity to pay this word of tribute to his memory and to the service he gave the University.

Among the men who have built Cornell he was outstanding and his name will live as long as the institution. Singularly free of self-seeking, his thoughts and energies were always centered on the work and responsibility in hand. It is inevitable that he should be thought of chiefly in connection with Sibley College and the development of engineering at Cornell; but his service to the University was never limited to one college. There was no phase of student life that did not claim his attention and always to its advantage and improvement.

In my official association with him I think the trait that most impressed me was his unflinching sense of justice. His anxiety to be always fair in judgment was most appealing and, coupled as it was with the warm sympathy that so closely underlay that well known blunt exterior, made him a man to tie to. In other words, Herman Diederichs was not only a notable University officer and teacher, he was a man we all admired and loved and it is hard to picture Cornell without him."

(Signed) LIVINGSTON FARRAND
Former President of Cornell University.

"Herman Diederichs has been a stalwart figure in Cornell University for a long time, and it is hard to realize that we must now do without him. His gruff exterior

was no bar to friendship, and his straightforward way of cutting through details to reach the heart of any issue made him a wise counsellor in matters both academic and personal. One wonders who can take his place in many things



DEAN HERMAN DIEDERICHS
1874 — 1937

in which his views have been decisive. His broad and sympathetic interest in student and alumni affairs caused him to acquire a unique responsibility for the good name of the University at home and abroad.

Of course, we shall carry on, and work he did must still be done; but there will be many occasions when students, alumni, and faculty will say, "I wish Herman Diederichs were here to give us his opinion on this matter."

A university is a product of manpower, and Herman Diederichs was an exemplary type."

(Signed) R. M. OGDEN
Dean, College of Arts and Sciences.

"It is quite impossible not to be superlative when speaking or writing of Herman Diederichs. Whether you think of him as an engineer, as a college administrative officer, as a leader of affairs of students outside the classroom, or simply as a man, it must be in unusual terms. For "Died" was surely one of the most unusual men who ever lived on the Cornell campus, one of the relatively small number who have left impressions that will live. He touched student life and influenced it in many important ways. To the alumni he was a spokesman of the University whom the old grads in all parts of the country welcomed and honored because of the frank honesty of his speech just as much as for their downright affection for him."

(Signed) FOSTER M. COFFIN
*Director of Willard Straight Hall and
Alumni Representative of the University.*

"It is too soon to appraise the full significance of the great loss the college has suffered in the passing of Dean Diederichs. He was an outstanding figure in his profession, through his researches, his writings and his activities in the leading technical societies. In the School of Mechanical Engineering, to which he devoted his life, he became the personification of his chosen field to students and alumni. But through his wider range of interest in the University's student, athletic and alumni affairs, hosts of others besides his colleagues and students came to know his lovable character, his kindly consideration and helpfulness. His colleagues have lost a respected and staunch friend. The University has lost one of her most beloved alumni.

(Signed) S. C. HOLLISTER
Associate Dean, College of Engineering.

"Herman Diederichs is no more. At the height of a notable career with fine opportunities for achievement spread before him, and great plans for the future just begun, he was called to perform a greater task. The person of this great Cornellian has left our campus, but his mighty spirit carries on.

I can never forget his last days. In the long struggle against a rare affliction and insurmountable obstacles, he did not falter. In fact all of the fine elements of his sterling character were cast into bold relief as the end drew near.

He retreated like a brave soldier under orders; and although he left this world behind him, he still seemed to conquer. With the courage of a hero, and the fortitude of a Spartan of old he died as he had lived—"the same old Died."

JOHN R. BANGS, JR.

Professor of Administrative Engineering.

"In his death Cornell has lost a very real man, one who was always ready to give all there was in himself for Cornell, who never did anything for the glory which might attach to himself in the doing, who was always a good soldier, and carried on as the commanding officer wished, who in everything that he did and was typified what was known as the real Cornell spirit.

I am profoundly and sincerely grieved that he had to be taken before he had the opportunity to make a very real and probably a last great contribution to Cornell, viz., the awakening of what some of us at one time knew as a Cornell School of Engineering. I knew what his plans were. I knew what he wanted to do, and I think with many others I know what he could have done had he had the real opportunity to do it.

But he must bow to a greater Will than our own. His ways are inscrutable. We will have to abide by them. Through all, however, there will always be attached to the Engineering Halls of Cornell, and to many of the other University activities, the indomitable spirit of Herman Diederichs."

(Signed) C. R. VANNEMAN
President, Cornell Alumni Corporation

"To his reward has gone Herman Diederichs and may it be as great as his services. He was a man among men, who hid behind an austere exterior, a deep kindliness and sympathy with broad interests in all sides of the University activity. A man with whom one might differ radically and yet remain a friend. His services to the University were many, in his chosen field of Engineering, as a teacher, as a consultant, and a research worker. On many important Faculty Committees, on the Athletic Council, in his fraternity, his wise advice and counsel were often sought and freely given. He was friend alike of student and faculty—we salute him!"

ABRAM T. KERR.

Secretary of the Medical College

"Be it Resolved that the Cornell Society of Engineers express its great loss and deep sorrow at the death of Dean Herman Diederichs. His lifelong and loyal association with Cornell and its many students and alumni has endeared him to all because of his strong character and friendliness toward all who knew him. Through his breadth of knowledge, good judgment, interest and untiring efforts he has established his national reputation as a teacher, author and administrator, with a consequent enhancement of the reputation and standing of the Engineering College at Cornell. His example and inspiration will live on in the hearts of all who knew him."

CORNELL SOCIETY OF
ENGINEERS

"Herman Diederichs has gone—and I have lost a friend. And it is not only I that have lost a friend; every man who has ever collaborated with Herman Diederichs has lost a friend. There will be many a wet eye when Cornell students learn of his passing—learn that that gruff, kindly voice of his will never again be raised in protest of the errors of their ways.

In losing Herman Diederichs, Cornell has lost a strong man. He will be missed. He will be missed particularly by those of us who have served with him and under him during his long career in Sibley College of Engineering. We—all of us—will long remember "that tower of strength which stood foursquare to all the winds that blew."

(Signed) P. M. LINCOLN

Director of the School of Electrical Engineering

"To those of us who have been associated with Dean Diederichs throughout his long years of devoted service to Cornell his death brings sorrow beyond expression. From his student days he has ever given his very best to the interests of the University and Engineering College, and because of his wisdom and capability he was constantly called upon to undertake new burdens taxing him to the limit of his energy. But withal he was never too busy to take the most kindly, patient and sympathetic interest in the problems of others. The many students who came in contact with him soon realized that under his gruff exterior there was a heart of gold and a most kindly interest in their affairs, whether academic or personal, and many a worthy student has owed to him the possibility of his continuance in college. His colleagues, students and many thousand alumni will honor and cherish his memory. He leaves a lasting mark on the College, whose affairs were his life concern, and on the host of friends who have been fortunate to have come under his influence."

(Signed) W. N. BARNARD '97

Director of School of Mechanical Engineering.

Cornell University has lost an able official; students have lost a stern but warm-hearted friend; the world has lost a man whose whole life was given in unselfish devotion to helpfulness to others.

If ever there was a man whose left hand was continually busy about kindly deeds of which his right hand knew nothing, that man was Diederichs.

When students first met him they were scared of his stern expression; but they soon learned that it covered kindness.

Died was a powerful hammer-throwing man. Once a heavy machine in parts was received at Sibley College and Diederichs was struggling with its assembling. A big, husky student came to the door and said:

"Can't I help you?" Died turned with his kindly scowl and said, "Oh, go home and play with blocks."

He was a clear thinking teacher, an able administrator, and his influence modified every worthy activity at Cornell."

(Signed) ALBERT W. SMITH

Former Dean, College of Engineering.

EDITORIALS

Welcome to you, Members of the Class of '41.

In having fulfilled the entrance requirements of the University, and of the College of Engineering, you have completed the first of a long series of events, which will ultimately lead to your acceptance into the engineering world and society.

Some of you will find no difficulty in your studies and will graduate with ease. Others will have the more usual struggle with Calculus, with Mechanics, with Mech Lab... And some unfortunates will fall by the way and never hear their names read at Commencement.

But let us not become so engrossed in what we are doing, that we lose sight of where we are going. Graduation is not the end towards which we are aiming. We have come here not only to become engineers, but to become engineers who fit into the society which will support us. We must prepare ourselves, while we are in college, to be worthy of that society—to be a part of it and to understand it. During the past few years, there has been an increasing tendency for technical schools to produce an engineer who knows more about engineering than ever before (which is as it should be), but who knows less about general affairs than did his predecessors.

The pressure is so high in the present day engineering courses that we are apt to neglect all other matters in our efforts to keep up with our work. This should not be. College is the best place to begin a "cultural" education. It is often too late to attempt this after graduation. So we urge you, to begin to broaden yourselves as Freshmen.

Besides your engineering studies, take time to study the newspapers; to read books. The political situation in Europe to-day is quite as important as the latest development in welding technique. Get into affairs on the campus. You will be rewarded a hundred fold for the effort that you put into competitions, athletics, publications. In the years after your freshman year, you will have the opportunity of choosing elective courses. Here is a chance to make up for the lack of "cultural" subjects included in your regular schedule. Choose these electives wisely, and you will have done yourself a great service. If you take a certain elective just because it is a "snap course", and therefore the path of least resistance, you, yourself, are losing out; not the University. Remember always, that you should be preparing yourself for the world of engineering—to fit into a community of human beings, and not of machines.

With the hope that you will profit by these suggestions, we greet you, Freshmen!

Welcome! Luck! Success!

DEAN HERMAN DIEDERICH

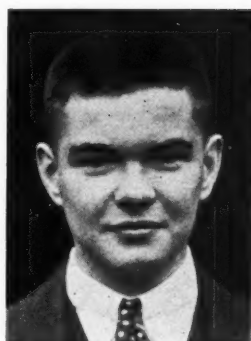
Dean Herman Diederichs has died, and we of the CORNELL ENGINEER have lost not only a teacher, friend, and idol, but also what might best be termed our Godfather. Our publication, now in its third year, was created by the merging of the *Sibley Journal of Engineering* and *The Cornell Civil Engineer*. During the trying period of transition and change, the unwavering and untiring hand of Herman Diederichs guided us on our way. As was typical of his activity in a multitude of University functions, his influence was ever felt; but, even more, the staff of the CORNELL ENGINEER was eager for that influence. To the majority of the student body, familiar only with his casual, gruff exterior, he was a man to be deeply respected and revered. To those who penetrated that exterior, he was also to be loved. Words will never be able to pay ample tribute to his greatness, but we should like to add the deep-rooted regret of the student body to that already expressed for the great misfortune of Cornell and Cornellians—the loss of Herman Diederichs.

FRATERNITIES AND RUSHING

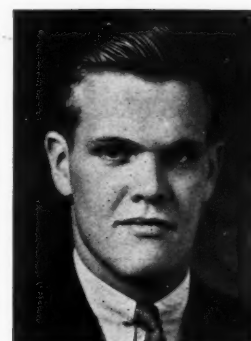
When a freshman wakes up on the Monday morning of registration, the first thing that attracts his attention is the multitude of men outside his door. These men are fraternity men. Their purpose is to call on as many men as possible, invite them over to their houses, and give the other brothers a chance to meet them. During this time there is sufficient opportunity for the freshmen to form an opinion of the entertaining fraternity and vice versa.

In choosing his fraternity a man should always keep in mind one main point: how will he get along with the men in the fraternity, especially those in his own class? This is a good reason for delaying the choice of a fraternity. See what sort of men have been pledged, and talk with them. It is foolish, and sometimes painful to choose a fraternity because it has more house parties or a bigger house than another group. These advantages would be more than offset by a lack of intimate friends in the house.

Rushing will undoubtedly prove an exciting and interesting experience for any freshmen. It gives one an excellent chance to make many friends and meet men who will later play an important part in his college career. Make the most of this opportunity. Do not let the popularity which seems bestowed on almost all rushees affect the way in which you make decisions. Be careful and use common sense in making the final choice.



Do You Know These Men?



RICHARD WESTCOMB MARCHAND

Driving an oyster boat may not appeal to most of us but this is just the job which Richard Westcomb Marchand '38 M.E. chose for summer work recently. Dick seems to specialize in doing strange things, so getting into a fight with a bear at Yosemite, and setting an all-time record for window breaking in the freshman dorms his first year were right in his line.

Dick has a serious side, however, as evidenced by the varied field of activities in which he has participated while at Cornell. Coming here from Manlius School, he played freshman lacrosse, was in the Dramatic Club and on the editorial board of THE CORNELL ENGINEER. Later, Chairman of the Sophomore Smoker Committee and Manager of the 150 pound crew, he was elected to Atmos, and Scabbard and Blade. His honors include Red Key, Sphinx Head, and the vice-presidency of Tau Beta Pi.

To combine an engineering education with a university atmosphere was Dick's plan in coming to Cornell. Apparently he has succeeded nobly. After graduation he hopes to enter into diesel engine work eventually working into administration. He may enter a business school after graduation in order to round out his college work.

To a man who has accomplished so much in college, and still enjoyed all the other phases of undergraduate life, success in later life should come as a matter of course. We hope it will and we wish Dick every success in whatever field he eventually decides to work.

EDWARD EVERETT HUGHES II

To pilot them through a very difficult season this year the varsity football squad has elected as captain Edward Everett Hughes '38 A.E.M.E. Hughes comes from Pittsburgh, where he played football, basketball, and baseball with the Edgewood High School teams. Being a rather versatile person Ted has participated in a widely varied field of activities while at Cornell.

His first year Ted was elected Captain of freshman football and appointed Chairman of the Frosh Cap Burning Committee. He was for three years a member of the Student Council, and is now President of that organization. His other activities include membership in Kappa Tau Chi, Aleph Semach, and Sphinx Head.

Ted, a member of Tau Beta Pi, asserts that contacts are equally as important as academic education. Associations and friendships formed, he says, will be remembered long after the technical material of the textbook has been forgotten. After graduation he hopes to enter production or sales work with one of the larger engineering firms.

For diversion, when he finds time for it, Hughes enjoys singing and piano playing with as much sailing as he can get in. He built himself a sailboat a few summers ago and has since enjoyed sailing it at his family's summer home on Lake Erie. Incidentally, Ted predicts a good season for the Big Red. "The team is a dark horse—better than most people think, and should give a good showing despite a tough schedule," he says.



COLLEGE

EMPLOYMENT OF ENGINEERING GRADUATES IN 1937

The notable improvement in employment demand for engineering graduates of 1937 was the more imposing because it followed a similar improvement over a previous year, manifested in 1936. This improvement was reflected in both the quantity and quality of employment opportunities.

From November 1936 to June 1937, fifty-one firms representing widely diversified industries sent representatives to Cornell to interview engineering students. In addition to those companies sending representatives, seventy-six others corresponded with the personnel office in regard to employing seniors. This combined list includes all types and magnitudes of companies employing engineering graduates.

The following table gives the resulting employment statistics for the graduates of June 1937 as of September 15, 1937. The improvement over 1936 does not appear in the percentage employed but instead is evidenced by the higher starting salaries and the increased number of offers received by the higher ranking students:

Course	Total No.	Total Emp.	Graduate Work	Total Emp.	% Emp.
C.E.	19	14	2	16	84 %
M.E.	39	36	2	38	97 %
E.E.	21	18	1	19	90½ %
A.E.	46	41	1	42	91 %
Chem.Engr.	6	6	0	6	100 %

The Civil Engineers are engaged as follows: Five are employed by steel companies while two as shown on the table will continue in graduate work. The remainder are in engineering work with railroads, construction companies and manufacturing companies.

Of the Mechanical Engineers, twenty are continuing their engineering in training courses. The remainder are widely scattered over a large field. The

list includes designing, general engineering, experimental engineering, research, and production work. Two as indicated, are taking graduate work.

Electrical Engineers found other wide fields for their activities. Some found berths with public utility companies. The larger part obtained employment with several manufacturing firms in this field with ten men in training courses.

Of the forty-two graduates in Administrative Engineering who found employment, a large percentage (70%) are engaged in training courses. The others are directly engaged in manufacturing or sales.

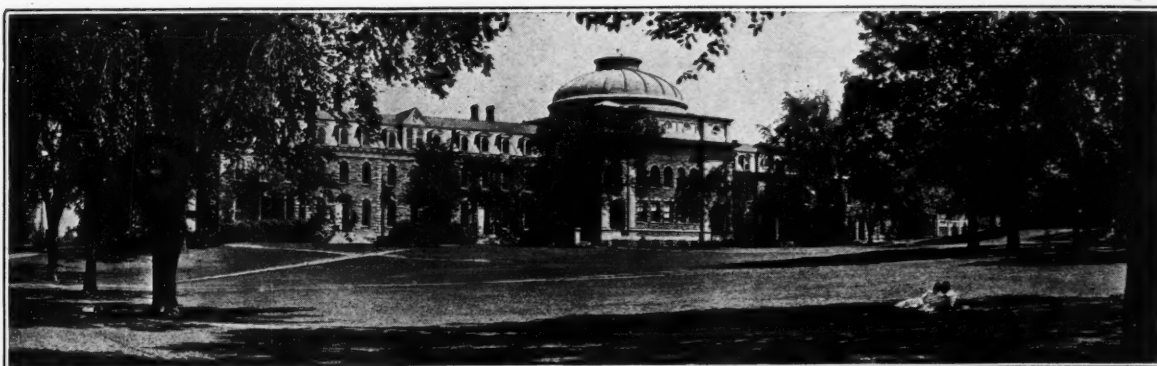
The small group of Chemical Engineers found employment at an early date in the rubber, wax and cork industries and also with producers of chemical products. The demand for Chemical Engineers continues to be most active.

In general the results of employment campaign for 1937 have been most satisfactory and it is hoped that the activity in employment will continue. The staff members in the College of Engineering concerned with the employment work are Professors Chamberlain, Perry, Rhodes, Moynihan and Miss Margaret Komaromi.

ARMY ENGINEERS

The United States Army Engineering Corps has again detailed a group of its leading West Point graduates to spend a twelve-month period of advanced study at Cornell. The first group and several subsequent groups were made up of four men. Last year this was increased to eight, and this year the detail is made up of fifteen men.

The officers at Cornell this year are: First Lieutenants Oscar B. Beasley, Paul H. Berkowitz, John Donoghue, Robert Erlenkotter, William J. Himes, Thomas H. Lipscomb, Charles W. Schnabel, Ferdinand J. Tate, and Robert B. Warren; and Second



NOTES

Lieutenants Aaron E. Harris, Clarence C. Haug, Frederick B. Hall, Stanley T. B. Johnson, William D. Milne and Donald A. Phelan. These will all take intensive courses in the School of Civil Engineering and are working toward the degree of Master of Science in Engineering.

MECH LABS REMODELED

It will no longer be necessary to keep the boilers in the Mech Lab running all year round. In the past, steam pressure had to be kept up at all times, for fire protection, but there is now a steam line from the University Central Heating Plant to the Mech Lab, which, together with a new water system, provides ample head for fire fighting. Experiments and demonstrations which require high pressure steam will all be performed in the period between Thanksgiving and Spring Recesses, during which time the boilers will be in operation.

The end of the Mech Lab Building now used for housing quarters by the fireman will be used to provide room for the expansion of the present metallographic and heat treatment laboratories.

The second floors of the East and West Mech Lab Buildings are undergoing complete remodeling. The two offices formerly used will be eliminated, and will be replaced by several individual offices for the instructing staff. The old office space is to be transformed into a department library. Where the Junior and Senior Offices were, there will be conference rooms, in which the students will be free to discuss their work with the instructing staff, to work on their reports, or to correct old reports.

According to Professor Davis, head of the Mech Lab department, it is hoped that these changes will make for a freer feeling between student and instructor; that they will enable the student to work under more favorable conditions than previously; and that

the quality of the reports, which is indicative of how much benefit the student is deriving from the course, will be improved.

A bridge has been built to connect the second floors of the East and West Mech Labs. The second floor of the latter building is to be devoted entirely to research. A constant temperature room, the construction of which will be begun immediately, is the beginning of a Heat Transfer Laboratory. The shop in the East Building and the Coal Labs will be moved. The work of remodeling will be carried on into the school term, but it is hoped that it will be completed this year.

McMULLEN REGIONAL SCHOLARS

This year, thirty-five men are the recipients of McMullen Regional Scholarship Awards. These men are all from States other than New York and are chosen by a group of prominent alumni in each of fifteen districts embracing the entire country. The stipend has been increased to \$300 for these and all previous holders of the scholarship. We wish to extend our congratulations to the following Freshmen:

In Administrative Engineering—J. Van Noy Barnes, L. M. Beagle, L. M. Birkhead, T. S. Carnes, W. C. Flickinger, R. W. Kruse and C. S. Lenderman;

In Chemical Engineering—J. L. Bennett, D. W. Bunte, R. T. Dungan, R. K. Finn, R. C. Newman, W. L. Ramsey, S. Ruden and N. W. Ryan;

In Civil Engineering—H. W. Lansing and W. F. Lynn;

In Electrical Engineering—F. L. Griffith, J. T. Riday, J. L. Schlener and E. L. Stempel;

In Mechanical Engineering—F. D. Amsler, F. W. Badger, E. W. Dozier, J. F. Funkey, J. P. Gurdack, R. W. Haase, W. D. Hart, R. B. Heath, S. R. Irish, R. E. Ohaus, M. S. Remorenke, M. E. Roe and J. C. Sterling.

CORNELL SOCIETY of ENGINEERS

GUSTAV J. REQUARDT '09, PRESIDENT

WALKER L. CISLER '22, EXECUTIVE VICE PRESIDENT

ELWYN E. SEELYE '04, SECRETARY-TREASURER

DAVID HARMON '31, RECORDING SECRETARY

"The objects of this Society are to promote the Welfare of the College of Engineering at Cornell University, its graduates and former students and to establish a closer relationship between the college and the alumni."

President's Column

September 15, 1937

Fellow Engineers:

The newly elected administrative officers of the Cornell Society of Engineers, beg to introduce themselves to alumni and undergraduates and to extend a welcome to the entering engineering classes.

We have the opportunity of personally meeting the members of the Society at our gatherings; our main contact with a majority of the non-member alumni and the undergraduates is through the medium of this page of the CORNELL ENGINEER. We hope that what we write here during the coming months will be of some interest to all Cornell engineers and help to increase our acquaintanceship.

Mainly for the benefit of the incoming students, let us briefly say that the Cornell Society of Engineers is organized for the welfare of our engineering college, its students, former students and faculty, and for a complete understanding between the college and its alumni; that these objectives take the form of advice and interest in curricula, faculty, student activities, college buildings, grounds and equipment; help in obtaining suitable work for fellow Cornellians; the writing of engineering articles for this magazine; the promotion of new and the continuation of old friendships among Cornell men; and many others. The Society is the official mouthpiece and authority for over 14,000 former students of the engineering schools. Any engineer who has been at Cornell a year is welcomed as a member and the dues are very nominal.

There was a time when professional men were counted only in medicine, law, divinity and teaching. It was then that Cornell gained her engineering prestige by advancing that science to the dignity of pro-

fessional status. As you know, other universities all over the country, during the last thirty years have been sending out graduates in engineering and the result has been that, while Cornell has not lost her reputation or lowered the quality of her engineering training, she does not stand out so prominently as she did at the turn of the century. While this need not give us undue concern, it should excite us to open our minds to thoughts for increasing the excellence of our College of Engineering.

There are Cornell engineers all over the world doing work vital to the world's needs. At Ithaca the engineering college is training young men to be just such engineers. To foster a closer relationship between the alumni and the college is to benefit Cornell and this exactly is a primary purpose of the Cornell Society of Engineers. The new officers dedicate themselves to that purpose.

Naturally we need, to achieve this and the other objects of the Society, the active and sympathetic help of the undergraduates and member and non-member alumni. This help we earnestly solicit. In subsequent letters we will discuss and suggest the forms this assistance can take. We know we will be helped by every man who has the interest of Cornell at heart.

We cannot let the opportunity of this letter pass without recording our grief in the death of Dean Herman Diederichs, a friend and teacher of many thousands of Cornell men.

Very truly yours,

THE CORNELL SOCIETY OF ENGINEERS,

GUSTAV J. REQUARDT,
President.

Nation-wide in service



THOUGH the Bell System is made up of 315,000 men and women serving every corner of the country, its structure is simple.

A The American Telephone and Telegraph Company coordinates all system activities. It advises on all phases of telephone operation and searches constantly for improved methods. **B** The 25 associated operating companies, each attuned to the area it serves, provide local and toll service.

C Bell Telephone Laboratories carries

on scientific research and development.

D Western Electric is the Bell System's manufacturing, purchasing and distributing unit. **E** The Long Lines Department of American Telephone and Telegraph interconnects through its country-wide network of wires the 25 operating companies and handles overseas service.

Thanks to the teamwork of these Bell System units, you can talk to almost anyone, anywhere, anytime—at low cost!

ALUMNI NOTES

'02 ME, (EE)—S. B. Earle, who is Dean of the School of Engineering, Clemson A. & M. College, at Clemson College, S. C., has been nominated for Manager of the American Society of Mechanical Engineers at a recent meeting of the Nominating Committee. Election of Officers for 1938 will be held by letter ballot of the entire membership, closing on September 28, 1937.

'08 CE—Guy H. Hunt has been Assistant Professor of Applied Mathematics at the University of California at Los Angeles since 1932. He is a member of the American Mathematical Society, Mathematical Association of America, and the American Society for the Advancement of Science. His address is 962 Hyperion Avenue, Los Angeles, California.

'12 ME—George J. Stockly is a member of the New York Stock Exchange, with Pell, Peake & Company, 24 Broad Street, New York City.

'13, '14 CE—Blinn S. Page of 1128 Devonshire Road, Grosse Pointe Park, Mich., visits the Cornell campus about three times a year and suggests that all "old grads" do the same.

'13 ME—E. Lysle Aschaffenburg, secretary of the Cornell Club of Louisiana, has purchased the twelve-story Pontchartrain Apartment Hotel in New Orleans, La.

'13 ME—William J. Russel is now associated with Cross and Brown Company and is located in their Long Island City office, 24-16 Bridge Plaza South, Long Island City. He was formerly executive vice-president of the Queensboro Chamber of Commerce.

'14 CE—Richard B. Carson has been appointed to fill the newly-created position of assistant superintendent of buildings of Cleveland, Ohio, Board of Education. Associated with the WPA for the last few years, he worked in the architects' division of the Board of Education about 1927. He lives at 2251 Barrington Road, Cleveland Heights, Ohio.

'17 CE—Harry H. Hemmings is assistant to the comptroller, Metropolitan Life Insurance Company, 1 Madison Avenue, New York City. In June, Mr. Hemmings was awarded first prize in an essay contest endowed by the late Major Louis Livingstone Seaman '70. The subject, for which he won \$500, was "A Practical Program to be Carried on by an Employer for the Elimination of Home Accidents."

'22 EE—Berlyn M. Werly has been elected President of the Rochester section of the American Society of Electrical Engineers. He is head of the electrical department of the Eastman Kodak Company, consulting engineer for the lighting code of the City of

Rochester, and is carrying on research at Mechanics Institute. Mr. Berly and his family visited Ithaca during his Class Reunion.

'24 CE—Charles Felix Lovan is now a member of the firm of Hillyer and Lovan, Engineers and Contractors, whose address is Box 371, Jacksonville, Florida.

'25 EE—Mallory K. Cannon, Jr., married Jessie Tredway on June 5 in Charlotte, N. C.

'27 ME—Philip J. Freda is with the Prudential Insurance Company in Newark, N. J., and is living at 148 South Munn Avenue, East Orange, N. J.

'27, '28 CE—Leo L. Landauer and Charles L. Kribs compose the firm of Kribs and Landauer, Houseman Building, Dallas, Texas, consulting and designing mechanical engineers. They specialize in air conditioning and the mechanical equipment of buildings, and have done considerable work in public buildings and residences in the Southwest.

'27, '29 EE, '31 AB—Arthur B. Berresford has settled permanently in Ithaca, where he has entered the practice of medicine at 102 Triphammer Road.

'27 ME—William J. Boyce Jr., resigned as sales engineer with the Ohio Bell Telephone Co., Toledo, Ohio, and became experimental engineer with the Inland Division of General Motors Corporation, Dayton, Ohio. He lives at 1717 Delaine Avenue, Dayton, Ohio.

'28 CE—Auguste S. Mathey is a salesman for the Passaic Rubber Company, in Clifton, N. J.

'29, '30 ME—George I. Finley, Jr., is with Pittsburgh Plate Glass Co., in Crystal, Mo.

'29 CE—Stanton C. Craigie, of the alumni Class of 1927, has just returned from a trip to England and now resides at 169 Carmita Ave., Rutherford, N. J. He says that he "will teach again in Union Junior High School here. American History, believe it or not . . ."

'29 CE—Joseph H. DeFrees is Vice-president of the Pennsylvania Furnace and Iron Company, in Warren, Pa.

'29 CE, '30 MCE—In a communication of late last Spring James E. P. Tai says, "I am building a new railroad here now. Family with me too. My present address is Ching-Kan Railroad, Section No. 7, Hweichow, Anhwei, China."

'31 ME, '36 PhD—Felix L. Yertzley, former instructor of machine design, has been granted a patent on a thermionic tube which he developed while at the University.

'31 EE—Harold B. Vincent, Jr., is an administrative assistant in the Farm Credit Administration, Washington, D. C. He resides at 2517 Mozart Place.

ALUMNI NOTES

'33 ME—David D. Fleet is assistant to the manager of the Consolidated Aircraft Corporation, San Diego, Calif. He has a son one year old, and lives at 3131 Elliot St., San Diego, California.

'34 EE—Kenneth D. Scott, Jr., married Florence Marie Willsey, Denison '34, on June 1. He writes that they visited Ithaca and the Campus during their wedding trip. Congratulations to the newlyweds! Scott is working on the development of automobile headlamps in the incandescent lamp department of General Electric, at Nela Park, Cleveland, Ohio. Here's hoping the future is a very bright one.

'34 CE—Frederic J. Schroeder, former Varsity oarsman, married Amelia Theresa Hageman June 19 at her home in Babylon. Mrs. Schroeder is an alumna of Dana Hall, Wellesley, Mass. They live in Elizabeth, New Jersey.

'34 CE—James W. Bruno is in the engineering and land department of the Cabot Gas Corporation, 131 South First Street, Olean, N. Y.

'34 CE—Theodore G. Wallace is in Bogota, Colombia, South America, where he was sent by Chester Everett, New York consulting engineer. His address in Bogota is Aparto Aero 3486.

'35 CE—Haywood G. Dewey, Jr., is engaged to marry Opal Evelyn Gibbs, of Goodland, Kansas. Dewey's address is 4337 East Eighteenth Avenue, Denver, Colorado.

'35 EE—Roger F. Diffenderfer is with Westinghouse Electric Co. at Kearney, N. J. His address is 162 Bergen Avenue, Jersey City, N. J.

'36 ME—G. Zodiac Angell is with the B. F. Gladding Co., South Otselic.

'36 CE—Nathaniel K. Willis is now working for the American Bridge Company.

'36, '37 ME—On July 6th, Albert G. Beyerle became a student engineer in the Schenectady plant of General Electric Company.

'37 AE—Howard B. Larlee is in the plant department of the Bell Telephone Company of Pennsylvania, located in Pittsburgh.

'37 AE—John J. Kreimer, former captain of the baseball team has entered the training course of the American Rolling Mill, Middletown, Ohio. He resides at 1339 Paxton Avenue, Cincinnati, Ohio.

'37 CE—James R. Wandling, former Business Manager of the CORNELL ENGINEER, is in the production department of Eastman Kodak Co. His home address is 16 Hillside Avenue, Glen Ridge, N. J.

'37 AE—Fred F. Sampson, Jr., graduated "With Distinction", is working for the Corning Glass Company, Corning, N. Y.

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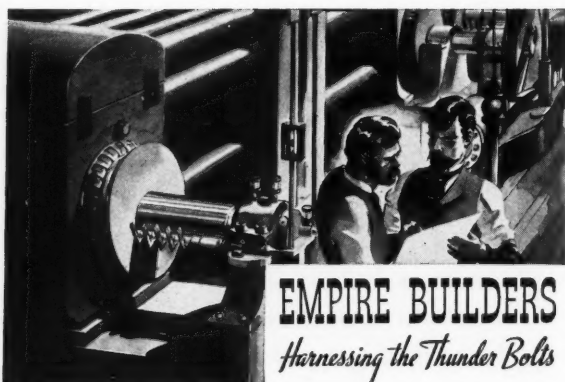
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*Here we are !
Here we are again !*

- Welcome to the Frosh Class and to the old guard welcome.
- You can thank your stars you were not in Ithaca this summer. Was it hot! But we managed to get thru all right. Did a spot of fishing, and had some fun, and we hope you did too.
- Cornell affairs always start off with a bang. Everyone seems to fit into his particular niche without any fuss, and all activities get under way with no lost motion.
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Stress & Strain

It seems that near the end of the fortieth day the ark hit against the protruding top of an electric light pole, which poked a hole in the bow. Noah sent his pet dog down, and the dog, to stop the leak, poked his nose into the hole, which is the reason dogs' noses are always cold. But the dog soon became tired, so Mrs. Noah went down and put her foot in the hole, which is the reason why women always have cold feet. Finally, however, as the water kept coming in, Noah himself went down and sat on the hole, which is the reason men always stand with their backs to the fire.

—The Wayne Engineer.

One day little Audrey locked the bathroom door and threw away the key and then laughed and laughed and laughed because she knew her father was going to have a beer party that night.

Professor: "What can you tell me about nitrates?"

Freshman: "Well-er-um-oh, yes. They're a lot cheaper than day rates."

—Rose Technic.

History prof.: "Who was Talleyrand?"

Student: "A fan dancer, and cut the baby talk."

Beggar: "Have you enough for a cup of coffee?"

Student: "Oh, I'll manage somehow, thank you."

IT PAYS TO ADVERTISE

"You advertised in our paper for a night watchman. Did you get any results?"

Shop Keeper—"I most certainly did. The advertisement appeared yesterday morning and I was burglarized last night."

—Passing Show.

Prof.—"Just what is space?"

Stude.—"I can't just express it, but I've got it in my head."

—Montana Engineer.

Bum: Say, buddy, could you let me have a dime for a cup of coffee?

Wise man: A dime? I thought coffee was only five cents.

Bum: I know, but I've got a date.

—Ohio State Engineer.

Judge: And, my poor man, did you ever earn an honest dollar in your life?

Tramp: "Yes, I voted for you at the last election."

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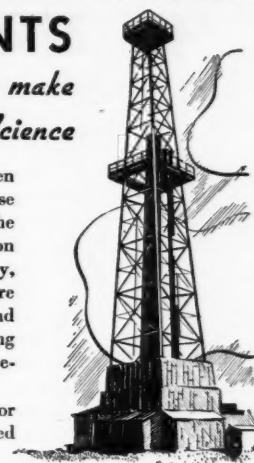
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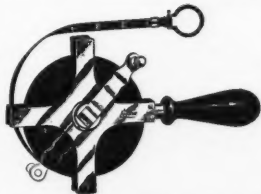
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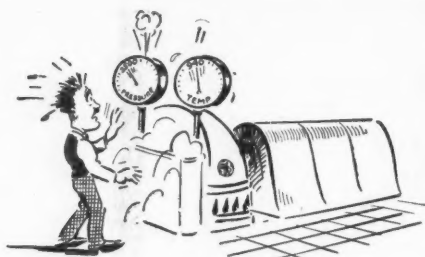
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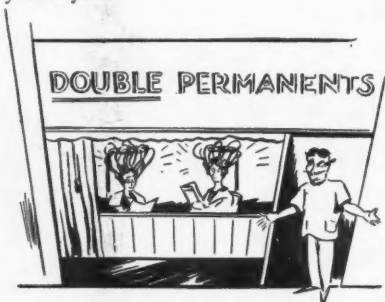


IT'S THE "TOPS"

A turbine-generator set now being built at the Schenectady Works of the General Electric Company will operate at a pressure of 2500 pounds and at a temperature of 940 F. This pressure is nearly 1000 pounds more than that used for any other commercial unit now in service, and the temperature is higher.

It represents the work of many men. Experts in mechanical design have solved unique problems—for the shell of the turbine will have to withstand pressures equal to those more than half a mile below the surface of the sea. When the unit is completed, electrical and chemical engineers, metallurgists, and research workers will have contributed knowledge and experience to it.

The design and construction of turbine-generators such as this is largely the work of college graduates—many of whom entered G-E Test only a few years ago. Thousands of other Test men are engaged in the design, manufacture, and sale of these and hundreds of other electric products that are used in industry today.



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Co-eds preparing for a dance are not the only subjects for permanent waving—there is the tungsten wire used in General Electric lamps.

This wire, $19/10,000$ inch in diameter, is first tightly wound, 335 turns to the inch, with the coils $1/1000$ inch apart. After the wire receives this first "permanent wave," it is coiled once more, 70 turns to the inch, with $7/1000$ inch between the turns. This reduces the original 20 inches of wire to a coil $5/8$ inch long and having an outside diameter of $310/10,000$ inch.

These permanent waves pay real dividends in increased efficiency because tungsten wire becomes more brilliant as it is more closely compacted. This new process is only one of many developments made by G-E engineers in the field of illumination—a field which offers many opportunities for technically trained men.



WELDING IN THE ARCTIC

A broken gear wheel recently threatened to shorten the 100-day working season of a group of miners on the Alaskan tundra, above the Arctic Circle. No time could be lost, for in early September the ground would be frozen solid.

There was but one chance to save the season's work. The gear wheel was loaded in an *umiak*—a native boat made of skins—and for five days an Eskimo crew paddled to the settlement of Candle, where the Arctic Circle Exploration Company had a General Electric gasoline-driven arc-welding set. Three hours after their arrival, the Eskimos were ready to return with the repaired wheel. Instead of the ruinous loss of a season's work, the interruption lasted only two weeks.

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